



Science Mission Directorate
Solar System Division

Archiving Data with the Planetary Data System

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Archiving Data with the Planetary Data System

Topics

- Science Data Management Policies
- Overview of Planetary Data System
- Planetary Data System Organization
- Planetary Data System Services
- Considerations for Proposers



Archiving Data with the Planetary Data System

Science Data Management Policies

- **Key Objectives**
 - Preserve and utilize space science data as a National resource
 - “Open” Data: data ultimately belongs to science community and public
 - Appropriate and balanced allocation of resources for data issues through mission life cycle
- **Requirements**
 - Projects develop a Project Data Management Plan in coordination with the PDS Science Discipline Node(s)
 - **Timely** delivery of science data products to archives for open availability
 - Data Analysis Programs (DAPs) must utilize data residing in the PDS



Archiving Data with the Planetary Data System

Overview of the Planetary Data System

- PDS is the official planetary science data archive for the NASA Science Mission Directorate's Planetary Science Division
- PDS is chartered to ensure that planetary data are archived and available to the scientific community
- PDS is a distributed system designed to optimize scientific oversight in the archiving process
- The PDS has been in existence in its present form for ~20 years
 - evolved from an offline media archive to a distributed online system, and still evolving...



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Planetary Data System Organization

PDS is a close federation of Nodes with both **Science and **Support** functions**

- Science functions are organized by discipline and include:
 - data ingestion
 - data distribution
 - interfacing with data suppliers and users to ensure that:
 - maximum science value is captured within the archive
 - the archive is of greatest utility to both immediate and long-term science users
 - *Immediate users*, by their use of the system, help PDS understand if the services and data sets are of optimal use to the community. These users have the benefit of an active instrument team to whom comments and replies can be passed, if needed, allowing the archive to be modified.
 - *Long-term users* need final, stand-alone archives because the instrument experts may no longer be available.



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Planetary Data System Organization

PDS is a close federation of Nodes with both Science and Support functions

- Support functions include basic development and cross-discipline support such as
 - common tools, libraries, procedures, and standards for data preparation, submission, and management
 - common tools for data manipulation
 - an infrastructure that facilitates
 - easy navigation within and access to holdings throughout the federation
 - simple system-wide maintenance and upgrades
- The Engineering Node focuses primarily on Support; the other Nodes focus primarily on Science, but all have at least test bed and review tasks



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Planetary Data System Organization

- **Management Node (GSFC)** - Provides Program Management, budget support
 - *Ed Grayzeck (Program Manager, Program Scientist)*
 - *Tom Morgan (Deputy Program Manager)*
- **Science Discipline Nodes** - Discipline Scientists provide expertise to interface with Flight Program Scientists. Science Discipline Nodes are:
 - Atmospheres (NMSU) – *Reta Beebe*
 - Geosciences (Washington U) – *Ray Arvidson*
 - Imaging (USGS Flagstaff/JPL) – *Lisa Gaddis*
 - Planetary Plasma Interactions (UCLA) – *Ray Walker*
 - Rings (NASA Ames) – *Mark Showalter*
 - Small Bodies (U of Maryland) – *Mike A'Hearn*
- **Support Nodes** – Provide support services to Science Discipline Nodes and/or the Science Community
 - Engineering Node (JPL) – *Dan Crichton*
 - Navigation Ancillary Information Facility (JPL) – *Chuck Acton*

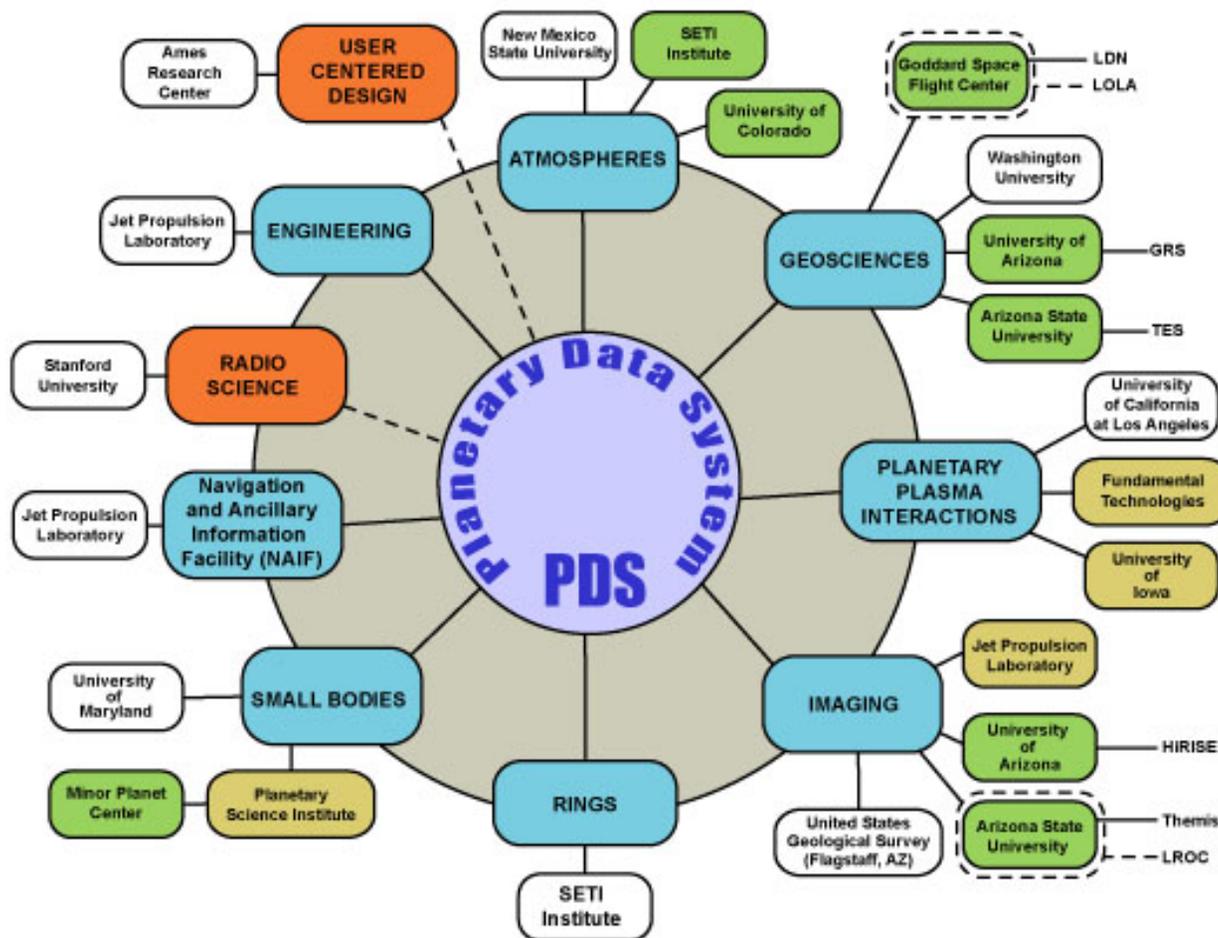


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Planetary Data System Organization

NODES/SUBNODES/DATA NODES

Function





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Planetary Data System Services

- PDS establishes and maintains standards for high quality data archives
- PDS works with missions to create complete data sets (calibrations, documentation, metadata)
 - PDS develops and maintains a suite of tools to help data producers create and validate archive-quality data products
 - PDS personnel can be funded by the mission to perform mission archiving tasks
- PDS provides expert assistance to the scientists who use the archives
- PDS ensures the viability of planetary data that might otherwise be lost



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Considerations for Proposers

- *Early* involvement/interface with PDS is necessary and critical to satisfy the required product delivery/pipeline
 - The PDS is undergoing a major revision (PDS4, aka PDS-2010), which makes it even more critical to contact PDS personnel for early guidance.
- Lead PDS Discipline Node scientists guide/establish use of PDS standards and formats by Projects for each data set
- Data providers should strive for delivery of higher order, usable data products to the PDS
- Delivery of data to PDS must occur within six months of collection, allowing for an exclusive use period by Project PI's
 - Future goal is to make Project Ground Data System/Science Data System completely PDS compliant
- Archiving with PDS is a requirement, not an option...
 - Past performance with the PDS is a criteria in Phase B down-selections



Archiving Data with the Planetary Data System

What is PDS-2010?

- A PDS-wide project to upgrade PDS from PDS3 to PDS4
- A transition from a 20-year-old collection of standards and tools to a modern system constructed using best practices for data system development.
- Fewer, simpler, and more rigorously defined formats for science data products.
- Use of XML, a well-supported international standard, for data product labeling, validation, and searching.
- A hierarchy of data dictionaries built to the ISO 11179 standard, designed to increase flexibility, enable complex searches, and make it easier to share data internationally.



Archiving Data with the Planetary Data System Considerations for Proposers (continued)



- PDS continues to evolve. Check back for updates → <http://pds.nasa.gov>
- Proposers Archive Guide (PAG) provided to assist in archive costing and interfacing with the PDS → <http://pds.nasa.gov/documents/pag/pag.pdf>
- Cost Model available for estimates (under Documents)
- Latest standards, formats and sample archive plans also available
- Please contact PDS representatives if you have any questions